Plant Physiol. (1994) 104, xxiii–xxvi
0032-0889/94/104/xxiii/04/$1.00/0

Author Index

A

Abadía, Anunciación, 667
Abadía, Javier, 667
Adiwilaga, Kartika, 1459
Al-Bashir, Mohamed, 527
Albersheim, Peter, 699
Allan, Andrew C., 1107
Allan, Deborah L., 657
An, Hongyan, 799
Anderson, Britt E., 1177
Anderson, James V., 303, 1359, 1371
Anderson, Jan M., 1033
Anderson, Shawn L., 349
Anraku, Yasuhiro, 281
Aoki, Hideyuki, 1473
Aro, Eva-Mari, 1033
Asard, Han, 1455
Ashworth, Edward N., 737
Atherton, Neil M., 1333
Atkinson, Ian J., 813

B

Baba, Tadashi, 1449
Badger, Murray R., 605
Bahk, Jeong Dong, 793
Bakuleva, Natalia P., 153
Balachandran, Suchandra, 1043, 1051, 1059
Ball, Steven, 1287
Barber, Mark S., 551
Barkla, Bronwyn J., 209
Bartholomew, Dolores M., 307
Bartley, Glenn E., 1469, 1471
Basel, Leslie E., 691
Basu, Atanu, 1007
Basu, Urmila, 1007
Bauer-Doranth, Ulrike, 1301
Bauwe, Hermann, 1077, 1079
Baykov, Alexander A., 153
Becana, Manuel, 453, 1231
Bednarek, Sebastian Y., 591
Beldman, Gerrit, 99
Belkhodja, Ramzi, 667
Berkelman, Tom, 287
Beuning, Lesley L., 1083
Beveridge, Christine A., 953
Blein, Jean-Pierre, 1245
Blumwald, Eduardo, 209
Boersig, Micheal R., 1159
Böger, Peter, 119
Bogorad, Lawrence, 753
Bolaños, Luis, 85
Bolle, Cordelia E. H., 997
Bonilla, Ildefonso, 85
Bostock, Richard M., 1237
Boudet, Alain Michel, 75
Bowen, Judith H., 1429
Bowlby, Neil R., 349
Bown, Alan W., 865
Bowra, Steve, 1167
Boyer, Charles D., 1159
Bradford, Kent J., 431, 623
Brearley, Charles Alistair, 1381
Breitkreuz, Kevin E., 865
Brenner, Mark L., 339, 535
Bressan, Ray A., 1105
Bres-Vloemans, Sandra A., 109
Briggs, Winslow R., 1317
Brush, Ruth Anne, 725
Bucheli, Eva, 699

C

Cahoon, Edgar B., 827, 845
Caldwell, Charles R., 395
Caler, José A., 271
Carpenter, Clifford D., 1015
Carrasco, José L., 381
Caubergs, Roland J., 1455
Causse, Mathilde, 179
Charng, Yee-yung, 1287
Chazen, Ofer, 1385
Chen, Jin-Qing, 305
Chen, Ruoying, 127
Cheong, Yong Hwa, 793
Chino, Mitsuo, 497, 881
Chitnis, Parag R., 461
Cho, Moo Je, 793
Choi, Doil, 1237
Chong, Pele, 971
Chory, Joanne, 339, 363, 1139
Chourey, Prem S., 293
Christopher, David A., 1119
Chueca, Ana, 381
Cleland, Robert E., 691
Clouse, Steven D., 161, 505
Cohen, Yigal, 59
Coleman, John R., 1393
Comai, Lucio, 857
Cooper, James B., 289, 747
Cornelissen, Ben J. C., 109
Cossins, Edwin A., 373, 813
Crawford, Lesley A., 865
Crofts, Antony R., 769
Crotty, Christopher M., 785
Crowe, John H., 1193
Crowe, Lois M., 1193
Cruiziat, Pierre, 189
Cutler, Adrian J., 291
Czakó, Mihály, 1067

D

Daley, Paul F., 1059
Darvill, Alan G., 699
DasGupta, Maitrayee, 961
Davies, Eric, 1465
Davies, John P., 981
Davies, William J., 309
de Felipe, María R., 85
Degousée, Norbert, 945
de Knecht, Joop A., 255
de Lorenzo, Cristina, 85
Deltour, Roger, 1333
DeWald, Daryll B., 439
Dharmasiri, Sunethra, 1401
Diez, Jesús, 425
Dörmann, Peter, 839
Douce, Roland, 597
Doung, Chien, 1087
Doyama, Naomi, 1473
Droux, Michel, 597
Dunning, Nancy, 699
DuPont, Frances M., 287
Dutta, Sunil, 623

E

Eckey-Kaltenbach, Heidrun, 67
Eichacker, Lutz A., 907
Elich, Tedd D., 1139
Elkind, Yonatan, 683
El Mtili, Nourredine, 809
Ernst, Dieter, 67
Ernst, Wilfried H. O., 255
Espie, George S., 785, 1419
Esteban, Elvira, 85
Etienne, Anne-Lise, 235

F

Fagan, Matthew, 1139
Fairbairn, David, 1167
Falbel, Tanya G., 639
Farnden, Kevin J. F., 417
Fawley, Marvin W., 797
Feix, Günter, 1467
Ferguson, Ian B., 1429
Fernández-Pascual, Mercedes, 85
Fernbach, Ewald, 1317
Fisher, Donald B., 7, 17
Flieger, Karin, 997
Fliegner, Wolfgang, 1325
Fluhr, Robert, 59
Fonollá, Juristo, 381
Fox, Tama C., 925
Foyer, Christine H., 171
Frensch, Jürgen, 247
Frentzen, Magrit, 839
Fricke, Wieland, 1201
Fujii, Nobuharu, 1151
Fujii, Tadashi, 1095
Fujiwara, Toru, 881
Furuya, Masaki, 363

G

Gabryś, Halina, 769
Gallwitz, Deiter, 591
Gao, Jie, 1251
Gárate, Agustín, 85
Garbow, Joel R., 527
García-Fernández, José Manuel, 425
Gauthier, David A., 629
Gebhardt, Christiane, 445
Geiges, Bernd, 119
Georges, Fawzy, 291
Giese, Martina, 1301
Gil, Pedro, 777
Gilroy, Simon, 1185
Giraudat, Jérôme, 761
Giroux, Michael, 179
Glass, Anthony D. M., 899
Goddard, Russell H., 1
Golbeck, John H., 1459
Goldstein, Guillermo, 675
Gombos, Zoltan, 563
Gómez-Aparisi, Joaquín, 667
González-Reyes, José A., 271
Goodman, Howard M., 297
Grabowski, Reiner, 591
Green, Allan, 1075
Green, Pamela J., 777
Grégory, Nicole, 179
Griess, Eike A., 1467
Griffin, Kevin L., 355

Griffith, Marilyn, 725, 971
Grossman, Arthur R., 981
Grusak, Michael A., 649
Gu, Yong Qiang, 711
Guan, Han Ping, 1449
Guerinot, Mary Lou, 295, 815
Guinel, Frédérique C., 865
Gulick, Patrick J., 799
Gustine, David L., 917
Guy, Charles L., 303, 1359, 1371
Guy, Robert D., 541

H

Hadley, Jill A., 917
Hahn, Daniela, 1101
Hahn, Michael G., 699
Halevy, Abraham H., 321
Hall, J. L., 551, 1295
Halliday, Karen J., 1311
Hangarter, Roger P., 889
Hanke, David Ernest, 1381
Hannah, L. Curtis, 179
Harada, Hiroshi, 801
Harada, John J., 857
Hardegger, Markus, 1351
Harrington, H. Michael, 1401
Harris-Haller, Larry, 811
Harvey, Dawn, 91
Hasegawa, Paul M., 1105
Haskell, Dale W., 303, 1359, 1371
Hatzopoulos, Polydefkis, 1167
Hawkins, Simon William, 75
Hayashi, Hiroaki, 881
Hayashi, Takahisa, 147
Heberle-Bors, Erwin, 1463
Heller, Werner, 67
Hendry, George A. F., 1333
Hengst, Ludger, 591
Herman, Patricia L., 1459
Hermoso, Rosario, 381
Hérouart, Didier, 873
Herrmann, Reinhold G., 997
Heuser, John E., 747
Hibino, Takashi, 305
Hidalgo, Antonio, 271
Hideg, Eva, 563
Higgins, Verna J., 209
Higuchi, Takayoshi, 305
Hinata, Kokichi, 147
Hirai, Masami Yokota, 497
Hirano, Hisashi, 805
Hirt, Heribert, 1463
Hitz, William D., 307
Hoekstra, Folkert A., 1193
Hoffmann-Benning, Susanne, 719
Hon, Wai-Ching, 971
Hong, Jorg Chan, 793
Hooks, Mark A., 581
Horemans, Nele, 1455
Horton, Peter, 227
Hotze, Michael, 1097, 1099
Houtchens, Kathleen A., 287
Hsiao, Theodore C., 247
Hu, Jim, 753
Huang, Jing-Feng, 49
Huang, Xiao-Fang, 293
Huffaker, Ray C., 925
Hurkman, William J., 803

I

Ida, Shoji, 1473
Iglesias, Alberto A., 1287
Igloi, Gabor L., 1467
Iida, Hidetoshi, 281
Iiyama, Kenji, 315
Inaba, Kumiko, 881
Intapruk, Chokchai, 285
Inzé, Dirk, 873
Iusem, Norberto D., 307, 1073

J

Jean-Jacques, Isabelle, 809
Jeannette, Emmanuelle, 179
Ji, Lin, 453
Jiao, Shuping, 797
Johnson, Jane F., 657
Jones, Russell L., 1185
Jones, Stephen D., 91
Jones, William T., 91, 417
Jun, Hyung-Kyun, 1231
Junkermann, Wolfgang, 617

K

Kaczor, Christine M., 1411
Kajiwara, Hideyuki, 805
Kamada, Hiroshi, 801
Kandasamy, Ramani A., 1419
Kapulnik, Yoram, 683
Kato, Yoji, 147
Kaufman, Lon S., 1251
Kemmerer, Elizabeth C., 557
Kende, Hans, 719
Kenefick, Donald G., 807
Key, Joe L., 793
Khrebtukova, Irina, 1093
Kikuchi, Yasuhiro, 801
Kim, Jungmook, 907
Kimata, Yoko, 263
King, John, 373, 813
Kirilovsky, Diana, 235
Kishinevsky, B. Dov, 327
Kitauchi, Fumiya, 1091
Kiyokawa, Shigeto, 801
Klapheck, Sigrid, 1325
Kline, Katie, 613
Klucas, Robert V., 453, 1231
Ko, Kenton, 1087
Ko, Zdenka W., 1087
Kobayashi, Kazumi, 801
Kochian, Leon V., 899
Koevoets, Paul L. M., 255
Kollöffel, Chris, 515
Komatsu, Setsuko, 805
Komeda, Yoshibumi, 497, 881
Koornneef, Maarten, 1311
Kopriva, Stanislav, 1077, 1079
Kovach, David A., 431
Kramer, David M., 769
Kreft, Bertolt D., 1215
Kreis, Martin, 809
Kremer, Diane F., 409
Kreps, Joel A., 1015
Krivitzky, Micheline, 809
Kück, Ulrich, 1101

L

Laber, Bernd, 1215
Lam, Thi Bach-Tuyet, 315
Lambrechts, Hilde, 515
Lane, Byron G., 803
Lanfermeijer, Frank C., 1277
Lång, Viola, 1341
Langebartels, Christian, 1301
Laszlo, Joseph A., 937
Laudencia-Chingcuanco, Debbie L., 857
Layzell, David B., 217, 541
Lázaro, Juan J., 381
Leblanc, Roger M., 1209
Lecharny, Alain, 809
Leech, Rachel M., 201
Lefebvre, Caroline, 171
Leigh, Roger A., 1201
Lemaux, Peggy G., 37
Leprince, Olivier, 1333
Lescure, Jean-Charles, 171
Li, Chun Ping, 29
Li, Morris, 857
Li, Qin-Bao, 303, 1359
Lienhard, Susanne, 1351
Liu, Bin, 1085
Liu, Yang, 777
López-Gorgé, Julio, 381
López-Ruiz, Antonio, 425
Lord, Elizabeth M., 711
Lübberstedt, Thomas, 997
Lukas, Thomas J., 1401
Lurie, Susan, 1429

M

Majeau, Nathalie, 1393
Makino, Amane, 1043
Mäntylä, Einar, 1341
Marcotte, Lucette, 761
Marienfeld, Joachim R., 301
Martin, Fabrice, 1245
Márton, László, 1067
McCaffery, Stephanie, 1033
McClung, C. Robertson, 889
McIntosh, Lee, 349
McKay, Marcus J., 277
McKinney, Susan, 1075
McMorris, Trevor C., 505
Meinzer, Frederick C., 521
Melchers, Leo S., 109
Meyerhoff, Paul A., 925
Miller, Karen J., 917
Mineyuki, Yoshinobu, 281
Miranda, Teresa, 235
Mitchell, Heidi J., 551
Mitsuhashi, Wataru, 401
Mlynarz, Andrzej, 725
Moisyadi, Stefan, 1401
Moloney, Angela H., 541
Montillet, Jean-Luc, 945
Morales, Fermín, 667
Moran, Jose F., 1231
Morot-Gaudry, Jean-François, 171
Mösinger, Egon, 59
Mullet, John E., 439, 907, 1119
Murata, Norio, 563
Murfet, Ian C., 953
Murphy, Denis J., 1167
Muthalif, Mubarack M., 1439

N

Nagai, Nobuo, 1091
Nagao, Ron T., 793
Nagatani, Akira, 363, 1139
Naito, Satoshi, 497, 881
Navas, Plácido, 271
Neff, Michael M., 1027
Neumann, Peter M., 1385
Neven, Lisa G., 303
Nevins, Donald J., 623
Newton, Kathleen J., 301

Nguyen-Quoc, Binh, 293
Niderman, Tierry, 59
Niu, Xiaomu, 1105
Nobel, Park S., 675

O

Oakes, Janette V., 1159
Oaks, Ann, 401
O'Brian, Mark R., 1411
O'Brien, Christopher E., 613
Oelmüller, Ralf, 997
Ohlrogge, John B., 821, 827, 839, 845, 1221
Ohsumi, Chieko, 147
Okazaki, Mitsuo, 1091
Okon, Yaacov, 683
O'Neill, Sharman D., 569
Orbović, Vladimir, 777
Oresnik, Ivan J., 217
Ort, Donald R., 769
Osmond, C. Barry, 1043, 1051, 1059

P

Pacchiano, Ralph A., Jr., 527
Palmer, Julie, 1317
Palos, Rafael, 271
Palva, E. Tapio, 1341
Papa, Chuck, 49
Pascal, Andrew A., 227
Pease, Elizabeth A., 889
Pelcher, Lawrence E., 291
Perewoska, Irène, 235
Peschke, Virginia M., 387
Pfitzner, Ursula M., 299
Piffanelli, Pietro, 1167
Pirck, Manfred, 1463
Plaut, Zvi, 521
Poff, Kenneth L., 777
Pohlenz, Hans-Dieter, 1215
Polle, Andrea, 617
Ponstein, Anne S., 109
Porst, Markus, 1317
Post-Beittenmiller, Dusty, 989
Poulton, Jonathan E., 29
Prado, Fernando E., 381
Preiss, Jack, 1287, 1449
Price, G. Dean, 605
Prins, Hidde B. A., 1277
Prioul, Jean-Louis, 179
Pritchard, Jeremy, 1201
Pugin, Alain, 1245
Puhlmann, Jörg, 699
Pyke, Kevin A., 201

Q

Qi, Xiaoqun, 127

R

Raikhel, Natasha V., 591
Rayle, David L., 505
Rea, Philip A., 153
Reddington, Brett D., 417
Reed, Jason W., 1139
Reid, James B., 277
Reinecke, Dennis, 339
Reynolds, Paul H. S., 91, 417
Reynolds, Tracey L., 591
Reyss, Agnès, 179
Rhee, Yoon, 49
Ricci, Pierre, 1245
Ristic, Zoran, 737
Roberts, Justin K. M., 581
Rodber, Karen R., 91
Rodermel, Steven R., 409
Rodgers, Lynn R., 327
Roldán, José Manuel, 425
Rollfinke, Ingrid K., 299
Rook, Fred, 515
Ross, John J., 277, 953
Rossi, Magdalena, 1073
Rowland, Lisa J., 1439
Ruban, Alexander V., 227
Rudiger, Wolfhart, 907
Ruffet, Marie-Line, 597
Ryals, John, 1109
Ryan, Gordon B., 91

S

Sachs, Martin M., 387
Sadka, Avi, 439
Salamini, Francesco, 445
Saleem, Mohammed, 291
Saliendra, Nicanor Z., 521
Sandermann, Heinrich, Jr., 67, 1301
Sandmann, Gerhard, 119
Sangwan, Indu, 1411
Sarath, Gautam, 453, 1231
Savage, Linda J., 989
Schat, Henk, 255
Scheuring, Chantel F., 811
Schopfer, Peter, 1269
Schröder, Gudrun, 1099
Schröder, Joachim, 1097, 1099
Schroeder, Julian I., 1177
Schroeder, Martin, 591
Schwebel-Dugué, Nicole, 809
Scolnik, Pablo A., 307, 1469, 1471
Sekimoto, Hiroyuki, 1095
Sela-Buurlage, Marianne B., 109
Shaff, Jon E., 899
Shearer, Gregory C., 581
Shen, Wei, 799
Sherrier, D. Janine, 327
Sherriff, Leanne J., 277
Shewmaker, Christine K., 1159
Shibata, Daisuke, 305
Shih, Ming-Che, 1103
Shiina, Takashi, 1259
Shimosaka, Makoto, 1091
Shinmyo, Atsuhiko, 285
Shinomura, Tomoko, 363
Shintani, David K., 1221
Short, Timothy W., 1317
Sicher, Richard C., 409
Sigrist, Markus, 135
Silflow, Carolyn D., 1
Sim, Sopheak, 339
Simon, Anne E., 1015
Sinclair, Bronwen, 189
Singh, Surinder, 1075
Sithole, Idah, 349
Slocombe, Stephen P., 1167
Smart, Lawrence B., 349
Smirra, Iris, 321
Smith, Alan G., 535
Smith, Michael W., 1411
Snustad, D. Peter, 1
Sohn, Won, 527
Somerville, Ronald L., 461
Sone, Yutaka, 1095
Sopory, Sudhir, 997
Spreitzer, Robert J., 1093
Staehelin, L. Andrew, 135, 639
Stalker, David M., 1159
Stark, Ruth E., 527
Staswick, Paul E., 49
Steponkus, Peter L., 467, 479
Still, David W., 431
Stockinger, Eric J., 1475
Stone, Bruce A., 315
Sturm, Arnd, 1351
Sundberg, Björn, 1341
Sutton, Fedora, 807
Swain, Michael J., 699

T

Takano, Mitsuo, 285
Tanaka, Charlene K., 803
Tang, Xiaoyan, 1081
Tan-Wilson, Anna L., 127
Tardieu, Francois, 309
Taylor, Brian H., 811
Taylor, Gregory J., 1007
Theil, Elizabeth C., 263
Thomas, Martine, 809
Thomas, Richard B., 355
Thompson, Donald B., 1159
Thomson, Linda J., 1295
Tomos, A. Deri, 1201
Toribio, Fermín, 425
Townsend, Angelika, 1215
Toyoshima, Yoshinori, 1259
Travis, Robert L., 925
Trejo, Carlos L., 309
Trewavas, Anthony J., 1107
Triantaphylidès, Christian, 945
Troxler, Robert F., 753, 1085
Tsiantis, Miltos, 1167
Tucker, Mark L., 557
Tunoyama, Yuichi, 1259
Turpin, David H., 629
Tyree, Melvin T., 189
Tyrrell, Pascal N., 785

U

Uchimiya, Hirofumi, 1151
Uemura, Matsuo, 467, 479
Uknes, Scott, 1109
Unger, Christoph, 1351

V

Vainstein, Alexander, 321
van Berkel, Joachim, 445
van Bilsen, Danielle G. J. L., 1193
Vance, Carroll P., 657
VandenBosch, Kathryn A., 327
van den Elzen, Peter J. M., 109
van Dillen, Marjolein, 255
Van Montagu, Marc, 873
Van Volkenburgh, Elizabeth, 1027
Varner, Joseph E., 747
Vartanian, Nicole, 761
Vaucheret, Hervé, 171
Veeranjaneyulu, Konka, 1209
Vera-Estrella, Rosario, 209
Verkamp, Elizabeth, 777
Verkleij, Jos A. C., 255
Viard, Marie-Paule, 1245
Vincentz, Michel, 171
Vincken, Jean-Paul, 99
Vishnevetsky, Michael, 321

Volpin, Hanne, 683
Voragen, Alphons Gerard Joseph, 99

W

Wada, Hajime, 563
Wada, Takuji, 1259
Wagner, Fred W., 1231
Waitz, Andreas, 1097, 1099
Walling, Linda L., 711, 1475
Walton, Jonathan D., 1113
Wan, Yuechun, 37
Wang, Co-Shine, 711
Wang, Fei, 535
Wang, Haiyin, 1105
Wang, Hong, 291
Wang, Jing, 297
Wang, Miao Yuan, 899
Wang, Ning, 7, 17
Ward, Eric, 1109
Ward, John M., 1177
Ware, Carl F., 711
Washburn, Tracy, 339
Watanabe, Yoshihiro, 805
Waterhouse, Rosemary N., 805
Webb, Mary Alice, 1081
Webb, Murray S., 467
Wedding, Randolph T., 613
Weeks, Donald P., 1459
Welin, Björn, 1341
Whitelam, Garry C., 1311
Wick, Susan M., 1
Wiesenborn, Dennis P., 1159
Williams, John H. H., 809
Williams, Lorraine E., 1295
Willis, Christine L., 277
Wilson, Karl A., 127
Wilson, Robert C., 289
Windhövel, Ute, 119
Winefield, Christopher S., 417
Wood, Andrew J., 1465
Wu, Keqiang, 373, 813

X

Xia, Bao-Sen, 805

Y

Yamanouchi, Hiroaki, 147
Yang, Daniel S. C., 971
Yang, Shudong, 189
Yelle, Serge, 293
Yi, Ying, 295, 815
Yildiz, Fitnat H., 981
Yokoyama, Ryusuke, 1151
Yoshida, Shizuo, 1131
Young, Andrew J., 227
Young, Jeff C., 889
Young, Roger J., 811
Yu, Jian-Wei, 605

Z

Zhang, Fan, 753
Zhang, Hong, 297
Zhang, James Z., 857
Zhang, Xian Sheng, 569
Zhao, Guo-Ping, 461
Zhen, Rui-Guang, 153
Zheng, Cheng Chao, 569
Zhong, Hai Hong, 889
Zimmer, Ina, 1325
Zukowski, Annette T., 691
Zurek, Daniel M., 161, 505

Plant Physiol. (1994) 104, xxvii–xxxvi
0032-0889/94/104/xxvii/10/$01.00/0

Subject Index

A

Abscisic acid
  chemical signals, plants that grow in drying soils, 309
  dessication tolerance during embryogenesis, rice and wild rice, 431
  extracellular reception site, *Commelina communis* guard cells, 1177
  gibberellin and, external face, plasma membrane of barley aleurone protoplasts, 1185
  gibberellin perception and, 1107
  -induced protein, homology to gene, tomato genomic clone, 1073
  mutations, soybean seed storage protein gene, transgenic *Arabidopsis thaliana*, 497
  water status and, *rab18* gene, freezing tolerance in *Arabidopsis thaliana*, 1341
Abscission zones, cellulase gene expression, soybean, 557
Acer pseudoplatanus (*see* Maple)
Acer saccharum (*see* Maple, sugar)
O-Acetylserine(thiol)lyase, serine acetyltransferase, spinach chloroplasts, 597
Acidosis, cytoplasmic, low temperature, mung bean cells, 1131
Acid phosphatase, soybean leaf, increased by seed-pod removal, 49
Acyl-acyl carrier protein thioesterase, glycerol-3-phosphate acyltransferase, octadecenoyl-ACP isomers, 839
Acyl carrier protein
  mitochondrial, *Arabidopsis thaliana*, 1221
  phosphopantethenylated precursor, spinach chloroplasts, 989
Adenosine triphosphatase, vacuolar, B subunit, cDNA encoding isoforms of barley roots, 287
Adenosine triphosphate, differential influence, 70-kDa heat shock cognates, spinach, 1371
S-Adenosyl-L-homocysteine hydrolase, cDNA, *Catharanthus roseus*, 1099
Adenylates, composition and distribution, soybean nodule tissue, 217
ADP-glucose pyrophosphatase, maize grain and source leaf, grain filling, 179
ADP-glucose pyrophosphorylase, kinetic/regulatory/structural properties, *Chlamydomonas reinhardtii*, 1287
Aging
  dry cattail pollen, altered phase behavior, imbibitional leakage, 1193
  pea epicotyls, chalcone isomerase, 1465
Aleurone
  barley, phosphoinositides, 1381
  barley protoplasts, external face of plasma membrane, gibberellin and abscisic acid, 1185
Alfalfa
  cDNA sequence encoding annexin, 1463
  root, induction of defense response, *Glomus intraradix*, 683
Algae
  Monoraphidium braunii, only one form of glutamine synthetase, 425
  Selenastrum minutum, inorganic phosphate enhancement, dark respiration, 629
Allium cepa (*see* Onion)
Allophycocyanin, α subunit gene, *Cyanidium caldarium*, 1085
Aluminum, stress, microsomal membrane proteins, wheat, 1007
β-Aminobutyric acid, accumulation of pathogenesis-related proteins, resistance to *Phytophthora infestans*, tomato, 59
γ-Aminobutyric acid, response to treatments reducing cytosolic pH, *Asparagus sprengeri*, 865
δ-Aminolevulinic acid dehydratase, soybean, 1411
Ammonium, uptake by rice roots, 899
(*R*)-Amygdalin, amygdalin hydrolase and, large-scale cyanogenesis, undamaged *Prunus* seed, 29
Annexin, cDNA sequence, alfalfa, 1463
Antifungal activity, pathogen- and wound-inducible protein, tobacco, 109
Antigens, chloroplast and cytosolic fructose-1,6-bisphosphates, pea and spinach, 381
Apoproteins
  light-induced greening, light-harvesting complexes, barley etioplasts, 135
  stability, plastid-encoded proteins P700 and D1, barley chlorophylls, 907
Apple
  degradation of cell wall-embedded cellulose, effect of xyloglucans, cellobiohydrolase and endoglucanases from *Trichoderma viride*, 99
  ribulose bisphosphate carboxylase small subunit, cDNA sequence, 1083
Arabidopsis thaliana
  accelerated flowering response, phytochrome B, low red/far-red ratio, 1311
  auxin-inducible *SAUR-AC1* gene, molecular genetic tool, 777
  blue light regulation, *Cab*1 gene, 1251
  cab gene, homology to *Cab-8* in tomato, 297
  chloroplast division and expansion, genetic analysis, 201
  conditional negative-selection marker gene, herpes simplex virus thymidine kinase gene, 1067
  containing *kin1* and *cor6.6*, 5.3-kb genomic fragment, 291
  de-etiolation, role for cytokinins, 339
  development, phytochromes A and B, overlapping but distinct functions, 1139
  drought rhizogenesis, 761
  freezing tolerance, water status and abscisic acid content, *rab18* gene, 1341
  functional complementation, yeast *YPT6* null mutant, 591
  genes encoding glycine-rich proteins, RNA-binding motifs, cold treatment and circadian rhythm, 1015
  induction of seed germination, phytochrome B regulation, 363
  mitochondrial acyl carrier protein isoform, 1221
  mutant *mto1*, overaccumulation, soluble methionine, 881
  mutants, chloroplast coupling reduction, 769
  nucleotide sequence, cDNA for peroxidase, 285
  regulation of *CAT2* expression, interactions, light and circadian clock, 889
  seedling, light-stimulated cotyledon expansion, 1027
  small GTP-binding protein family, 295
  trpB gene homology, single gene for β subunit, *Synechocystis* PCC 6803, 461
Arachidonic acid, signal transduction, potato, 1237
Arachis hypogaea (*see* Peanut)
Ascorbate
  free radical as electron acceptor, cytochrome *b*-mediated trans-plasma membrane electron transport, 1455
  free radical-stimulated onion roots, nutrient uptake changes, 271
Asparagus sprengeri, synthesis of γ-aminobutyric acid, response to treatments reducing cytosolic pH, 865
Aspartate aminotransferase-P_1
  cDNA, *Lupinus angustifolius* root tips, 417
  monoclonal antibodies against, lupin root nodules, 91
Atriplex nummularia, glyceraldehyde-3-phosphate dehydrogenase gene, 1105
Auxin
  -inducible proteinase inhibitor gene, tomato, 811
  -inducible *SAUR-AC1* gene, molecular genetic tool, *Arabidopsis thaliana*, 777
  inhibition of *Vsp* gene expression, sucrose modulation, soybean, 439
Avena sativa (*see* Oat)

B

Barley
  aleurone protoplasts, external face, gibberellin and abscisic acid, 1185
  aleurone tissue, phosphoinositides, 1381
  chlorophyll, plastid-encoded proteins P700 and D1, apoprotein stability, 907
  chlorophyll-deficient mutants, defects in magnesium-insertion step, 639
  chloroplasts, photosensory pathways, blue light/UVA-activated *psb*D-*psb*C transcription, 1119
  etioplasts, light-induced greening, light-harvesting complexes, 135
  independently transformed fertile plants, generation, large numbers, 37
  leaf, upper and lower epidermis, vacuolar solute patterns, 1201
  primary leaf, nucleotide sequence of cDNA, elongation factor, 807
  root, cDNA encoding isoforms, B subunit of vacuolar ATPase, 287
  root membranes, association, nitrate reductase, 925

salinity tolerance screening, chlorophyll fluorescence, 667
salt-stressed roots, nucleotide sequence, transcript encoding germin-like protein, 803
Bean
role of ascorbate free radical, electron acceptor, cytochrome *b*-mediated transplasma membrane electron transport, 1455
tissue printing on nitrocellulose paper, histochemistry, localization of H_2O_2, 1269
Beet, primary Ca^{2+}-ATPases, effect of inhibitors, animal sarcoplasmic/endoplasmic reticulum-type calcium pumps, 1295
Bicarbonate
Na^+-dependent transport
monensin inhibition, *Synechoccus* UTEX 625, 1419
quenching of chlorophyll *a* fluorescence, *Synechococcus* UTEX 625, 785
Blueberry, floral buds, dehydrin-like proteins, response to chilling, 1439
Boron, symbiotic dinitrogen fixation, pea *Rhizobium* nodules, 85
Branching enzyme I, maize endosperm, *Escherichia coli*, 1449
Brassica napus (*see* Rape)
Brassinosteroid
-regulated gene, molecular cloning, elongating soybean epicotyls, 161
-regulated stem elongation, gene expression and growth kinetics, wall extensibility, 505

C

Ca^{2+}-ATPases, primary, animal sarcoplasmic/endoplasmic reticulum-type calcium pumps, red beet, 1295
Cactus, species varying freezing tolerance, water relations, low-temperature acclimation, 675
Cadmium, -sensitive and -tolerant *Silene vulgaris*, phytochelatins, 255
Calcium
animal sarcoplasmic/endoplasmic reticulum-type pumps, primary Ca^{2+}-ATPases, red beet, 1295
arachidonic acid signal transduction, potato, 1237
changes in transport ability, development, soybean, 937
-dependent protein kinase, peanut seed, 961
Carbohydrate, status of tulip bulbs, cold-induced flower stalk elongation, flowering, 515
Carbon
assimilation and partitioning, photosynthetic electron transport, transgenic tobacco, 171
inorganic
low, inability of *Synechococcus* PCC7942 to adapt, 605
quenching of chlorophyll *a* fluorescence, *Synechococcus* UTEX 625, 785
inorganic phosphate enhancement, dark respiration, *Selenastrum minutum*, 629
isotope discrimination, growth under salinity, sugarcane, 521
Carbon dioxide
atmospheric enrichment, soybean leaf respiration, 355
elevated, photosynthetic acclimation, transformed tobacco, 409
Carbonic anhydrase, ribulose-1,5-bisphosphate carboxylase/oxygenase and, pea, 1393
Carotenoid, -associated protein, chromoplast biogenesis, cucumber corollas, 321
Carrot
soluble acid β-fructofuranosidases, cDNA cloning, cell wall isoenzyme, 1351
somatic embryogenesis-related activation, *rolC* promoter region, 1151
Catharanthus roseus
cDNA for 14-kDa polypeptide, 1097
cDNA for *S*-adenosyl-L-homocysteine hydrolase, 1099
Cattail, aging dry pollen, altered phase behavior, imbibitional leakage, 1195
Cecropia obtusifolia, root, water and solute flow dynamics, 189
Cellulase
deconstruction of cell wall, 1113
gene expression, soybean, 557
Cellulose, cell wall-embedded, degradation and effect of xyloglucans, apple, 99
Cell wall
assembly and cell division, 3,4-dehydroproline, tobacco protoplasts, 747
autohydration, lettuce endosperm, 623
covalent cross-links, 315
deconstruction of, 1113
-embedded cellulose, degradation and effect of xyloglucans, apple, 99
invertase, cDNA, *Arabidopsis* gene, 809
isoenzyme, cDNA cloning, carrot soluble acid β-fructofuranosidases, 1351
polysaccharides, generation of monoclonal antibodies, maple, 699
rapid hardening, hydraulic signals, growing corn, 1385
Chalcone isomerase, aged pea epicotyls, 1465
Chilling, dehydrin-like proteins, chilling in floral buds, blueberry, 1439
Chitin, -binding protein, antifungal activity, tobacco, 109
Chlamydomonas reinhardtii
ADP-glucose pyrophosphorylase properties, 1287
chloroplast RNA polymerase α factor, 753
chloroplasts, *trn*R/*trn*T/*trn*E genes, 1093
sulfate transport during growth, 971
Chlorophyll
barley, plastid-encoded proteins P700 and D1, apoprotein stability, 907
-deficient wheat and barley mutants, defects, magnesium-insertion step, 639
fluorescence, salinity tolerance screening, barley, 667
fluorescence imaging, tobacco mosaic virus, leaves, 1059
Chlorophyll *a*, quenching of fluorescence, accumulation of inorganic carbon, *Synechococcus* UTEX 625, 785
Chlorophyll *a*/*b*-binding protein, gene from soybean, 1475
Chlorophytum comosum (*see* Spider plant)
Chloroplasts
Arabidopsis thaliana, division and expansion, genetic analysis, 201
barley, photosensory pathways, blue light/UVA-activated *psb*D-*psb*C transcription, 1119
Chlamydomonas, *trn*R/*trn*T/*trn*E genes, 1093
coupling reduction, *Arabidopsis thaliana* mutants, 769
cytosolic fructose-1,6-bisphosphates and, antigenic relationships, pea and spinach, 381
RNA polymerase α factor, maize, *Chlamydomonas reinhardtii* and *Cyanidium caldarium*, 753
spinach
phosphopantethenylated precursor acyl carrier protein, 989
serine acetyltransferase free of *O*-acetylserine(thiol)lyase, 597
Chromoplasts, biogenesis, cucumber corollas, 321
Cinnamyl alcohol dehydrogenase
elicitor-induced, lignifying wheat leaves, 551
isoforms, periderm, *Eucalyptus gunnii*, 75
nucleotide sequence, *Eucalyptus botryoides* gene, 305
Circadian rhythm
cold treatment and, RNA-binding motifs, glycine-rich *Arabidopsis* proteins, 1015
light interactions, regulation of *CAT2* expression, *Arabidopsis*, 889
regulation, mRNA accumulation, *Pharbitis nil*, 569
Cladosporium fulvum, plant defense response, fungal pathogens, tomato, 209
Closterium, protoplast-release-inducing protein, 42-kDa subunit, 1095
Coenzyme A reductase, arachidonic acid signal transduction, potato, 1237
Cold
acclimation, spinach endoplasmic reticulum-luminal 70-kDa heat-shock cognate gene, 1359
-induced flower stalk elongation, flowering, carbohydrate status of tulip bulbs, 515
treatment and circadian rhythm, RNA-binding motifs, glycine-rich *Arabidopsis* proteins, 1015
Commelina communis, guard cells, abscisic acid, extracellular reception site, 1177
Computer software, AMAIZED, water and solute flow dynamics, trees, 189
β-Conglycinin
-degrading protease cleavage site, soybean, 127
expression in transgenic *Arabidopsis*, 497
Copper, -zinc superoxide dismutase promoter, developmental and environmental regulation, transgenic tobacco, 873
Coriander, endosperm, Δ^4-palmitoyl-acyl carrier protein desaturase, petroselinic acid synthesis, 827
Coriandrum sativum (*see* Coriander)
Corn
ADP-glucose pyrophosphorylase, grain and source leaf, during grain filling, 179
calmodulin cDNA, sequence comparison, 1467
chloroplast RNA polymerase α factor, 753
endosperm
branching enzyme I, *Escherichia coli*, 1449
development, endopeptidase activities, 401
germinating, loss of dessication tolerance,

respiration in free radical processes, 1333
growing, hydraulic signals, rapid cell wall hardening, 1385
hydroxymethyl-phytochelatins, metal-induced peptides, 1325
maize-root dynamic model, water and solute transport, trees, 189
mitochondria, high conservation, *nad4* gene, 301
phospho*enol*pyruvate carboxylase, affinity for substrate, oligomerization, 613
root, cell turgor and growth, changes in water potential, 247
root tips, nucleotide availability, 581
sucrose synthase 2 cDNA, complete nucleotide sequence, 293
transcripts induced by oxygen deprivation, 387
trpB gene homology, single gene for β subunit, *Synechocystis* PCC 6803, 461
Cornus sericea (Dogwood, Red Osier)
Corolla, cucumber, chromoplast biogenesis, 321
Cotyledon, light-stimulated expansion, *Arabidopsis* seedlings, 1027
Cryptogein, protein phosphorylation, induction in tobacco cells, 1245
Cucumber
cellular heat sensitivity, growth under supplemental UVB radiation, 395
corollas, chromoplast biogenesis, 321
tissue printing on nitrocellulose paper, histochemistry, localization of H_2O_2, 1269
Cucumis sativus (*see* Cucumber)
Cuticle, biosynthesis, rapidly growing internodes, deepwater rice, 719
Cutinase, deconstruction of cell wall, 1113
Cyanidium caldarium
allophycocyanin α subunit gene, 1085
chloroplast RNA polymerase α factor, 753
Cyanobacteria, *Synechocccus* UTEX 625, monensin inhibition, Na^+-dependent HCO_3 transport, 1419
Cyanogenesis, large-scale, (*R*)-amygdalin and amygdalin hydrolase, undamaged *Prunus* seed, 29
Cycloheximide, loss of microtubules in interphase cells, onion root tips, 281
Cystathionine γ-synthase, purification and properties, wheat, 1215
Cytochrome *b*, -mediated trans-plasma membrane electron transport, ascorbate free radical as electron acceptor, higher plants, 1455
Cytokinins, role, de-etiolation, *Arabidopsis*, 339
Cytoplasm
loss of microtubules in interphase cells, cycloheximide treatment, onion root tips, 281
low temperature-induced acidosis, mung bean cells, 1131
Cytoskeleton, plant cell, microtubule components, 1
Cytosol
Cu/Zn-superoxide dismutase promoter, developmental and environmental regulation, transgenic tobacco, 873
fructose-1,6-bisphosphates, antigenic relationships, pea and spinach, 381
triose-phosphate isomerase, cDNA clone, *Arabidopsis thaliana*, 1103

D

Datura innoxia, folate metabolism, 373
Daucus carota (*see* Carrot)
Dehydration, plants that grow in drying soils, mechanism, chemical signals, 309
Dehydrin
dessication tolerance during embryogenesis, rice and wild rice, 431
-like proteins, response to chilling, floral buds in blueberry, 1439
3,4-Dehydroproline, inhibition of cell wall assembly and cell division, tobacco protoplasts, 747
Desaturase, stearoyl-acyl carrier protein, temporal and tissue-specific regulation, *Brassica napus*, 1167
Dessication
loss of tolerance, respiration in free radical processes, germinating corn, 1333
tolerance during embryogenesis, rice and wild rice, 431
DNA, low inorganic carbon conditions, *Synechococcus* PCC7942 mutant, 605
DNA, complementary
S-adenosyl-L-homocysteine hydrolase, *Catharanthus roseus*, 1099
apple ribulose bisphosphate carboxylase small subunit, 1083
Arabidopsis
nucleotide sequence, phytoene synthase, 1471
nucleotide sequence, geranylgeranyl pyrophosphate synthase, 1469
aspartate aminotransferase-P_1, *Lupinus angustifolius* root tips, 417
calmodulin, sequence comparison, corn, 1467
carrot soluble acid β-fructofuranosidases, comparison, cell wall isoenzyme, 1351
cell-wall invertase, *Arabidopsis* gene, 809
chalcone isomerase, aged pea epicotyls, 1465
clone for cytosolic triose-phosphate isomerase, *Arabidopsis thaliana*, 1103
encoding isoforms, B subunit of vacuolar ATPase, barley roots, 287
endoplasmic reticulum-luminal heat shock protein, spinach, 303
extension, soybean, 793
ferric leghemoglobin reductase, soybean nodules, 453
full-length, phenylalanine ammonia-lyase, tobacco cell culture, 1091
glutathione reductase, soybean root nodule, 1081
14-kDa polypeptide, *Catharanthus roseus*, 1097
42-kDa subunit, protoplast-release-inducing protein, *Closterium*, 1095
light-harvesting protein, *Mantoniella squamata*, 797
Linum usitatissimum, steroyl-acyl carrier protein desaturase, 1075
nodulin, homology to protochlorophyllide reductase, *Medicago truncatula*, 289
peroxidase, nucleotide sequence, *Arabidopsis thaliana*, 285
sequence, rice leaf ferredoxin-$NADP^+$ reductase, 1473
sequence encoding annexin, alfalfa, 1463
sucrose synthase 2, complete nucleotide sequence, maize, 293
Dogwood, Red Osier, response of xylem ray parenchyma cells, freezing stress, 737
Drought, rhizogenesis, *Arabidopsis thaliana*, 761

E

Electron paramagnetic resonance, respiration and free radical processes, loss of dessication tolerance, germinating corn, 1333
Electrons
cytochrome *b*-mediated transport, ascorbate free radical as electron acceptor, higher plants, 1455
photosynthetic, carbon assimilation and partitioning, transgenic tobacco, 171
Electrophysiology, ammonium uptake by rice roots, 899
Elicitor
cryptogein, protein phosphorylation, induction in tobacco cells, 1245
-induced cinnamyl alcohol dehydrogenase, lignifying wheat leaves, 551
-induced enzyme dephosphorylation, plant defense response to fungal pathogens, tomato, 209
Elongation factor, nucleotide sequence of cDNA, barley primary leaf, 807
Embryogenesis
dessication tolerance, rice and wild rice, 431
-related activation, *rolC* promoter region, carrot cell cultures, 1151
Endopeptidase, development of activities, maize endosperms, 401
Endoplasmic reticulum
animal-type calcium pumps, primary Ca^{2+}-ATPases, red beet, 1295
-luminal heat shock protein, cDNA, spinach, 303
-luminal 70-kDa heat-shock cognate gene, cold acclimation, spinach, 1359
Endosperm
coriander, Δ^4-palmitoyl-acyl carrier protein desaturase, petroselinic acid synthesis, 827
corn
branching enzyme I, *Escherichia coli*, 1449
development, endopeptidase activities, 401
lettuce, cell-wall autohydration, 623
phloem unloading and post-phloem transport, microperfusion, attached wheat grains, 7
umbelliferae, phosphatidylcholine, metabolism of petroselinic acid, 845
Enzymes
deconstruction of cell wall, 1113
elicitor-induced enzyme dephosphorylation, plant defense response to fungal pathogens, tomato, 209
Epicotyls
aged pea, chalcone isomerase, 1465
elongating soybean, molecular cloning, brassinosteroid-regulated gene, 161
Epidermis, upper and lower, vacuolar solute patterns, barley leaves, 1201
Erwinia uredovora, phytoene desaturase in *Synechococcus* PCC7942, resistance, bleaching herbicide, 119
Escherichia coli
branching enzyme I, maize endosperm, 1449
glycogen synthase expression in tubers, highly branched starch, transgenic

potatoes, 1159
Etioplasts, barley, light-induced greening, light-harvesting complexes, 135
Eucalyptus botryoides, nucleotide sequence of gen2, cinnamyl alcohol dehydrogenase, 305
Eucalyptus gunnii, periderm, cinnamyl alcohol dehydrogenase isoforms, 75
Evolution, kinetic/regulatory/structural properties, ADP-glucose pyrophosphorylase, *Chlamydomonas reinhardtii*, 1287
Extensin, cDNAs in soybean, 793
Extracellular matrix, peanut nodule lectin, nodule parenchyma, 327

F

Fatty acids, metabolism, design, new plant products, 821
Ferredoxin, -NADP$^+$ reductase, sequence of cDNA, rice leaf, 1473
Ferric leghemoglobin reductase, cDNA, soybean nodules, 453
Ferritin, posttranscriptional regulation, nodule development, soybean, 263
Flaveria pringlei, P-protein of glycine decarboxylase, 1077
Flooding, -induced maize transcripts, 387
Flowering
  accelerated response in *Arabidopsis thaliana*, phytochrome B, low red/far-red ratio, 1311
  blueberry buds, dehydrin-like proteins, response to chilling, 1439
  cellular gene expression, soybean, 557
  cold-induced flower stalk elongation, carbohydrate status, tulip bulbs, 515
  photoperiodic induction, *Pharbitis nil*, 569
Fluorescence
  chlorophyll, tobacco mosaic virus, leaves, 1059
  quenching of chlorophyll *a*, accumulation of inorganic carbon, *Synechococcus* UTEX 625, 785
  use of tracers, post-phloem transport pathway in maternal tissues, developing wheat grains, 17
Folate, metabolism in *Datura innoxia*, 373
Formaldehyde, detoxification, spider plant, soybean cell-suspension culture, 1301
Free radicals, respiration, loss of dessication tolerance, germinating corn, 1333
Freezing
  antifreeze proteins, winter rye leaves, 971
  stress, xylem ray parenchyma cells, red osier dogwood, 737
  tolerance
    extremes, oat and rye, 467
    plasma membrane lipid composition, oat and rye leaves, 479
    water relations and low-temperature acclimation, cactus, 675
  tolerance in *Arabidopsis thaliana*, water status and abscisic acid content, *rab18* gene, 1341
β-Fructofuranosidases, carrot soluble acid, cDNA cloning, cell wall isoenzyme, 1351
Fructose-1,6-bisphosphates, chloroplast and cytosolic, antigenic relationships, pea and spinach, 381
Fucosyl, plant cell-wall polysaccharides, generation of monoclonal antibodies, maple, 699
Fusicoccin, modulation of H$^+$-ATPase activity, plasma membrane vesicles, oat root, 1277
Fusicoccin-binding protein, modulation by tissue maturation, fusicoccin, mung bean, 691

G

Gas exchange, carbon isoptope discrimination, growth under salinity, sugarcane, 521
Gene
  abscisic acid-induced protein, tomato genomic clone, 1073
  Alad, δ-aminolevulinic acid dehydratase, 1411
  allophycocyanin α subunit, *Cyanidium caldarium*, 1085
  Arabidopsis thaliana, cDNA, cell-wall invertase, 809
  auxin-inducible proteinase inhibitor, tomato, 811
  auxin-inducible *SAUR-AC1*, molecular genetic tool, *Arabidopsis thaliana*, 777
  brassinosteroid-regulated, molecular cloning, elongating soybean epicotyls, 161
  *Cab*1, blue light regulation, *Arabidopsis thaliana*, 1251
  cab in *Arabidopsis*, homology to *Cab-8* in tomato, 297
  CAT2, light and circadian clock, *Arabidopsis*, 889
  chlorophyll *a*/*b*-binding protein, soybean, 1475
  chloroplast division and expansion, *Arabidopsis thaliana*, 201
  det, role for cytokinins, de-etiolation in *Arabidopsis*, 339
  ESI3, stress induction, *Lophopyrum elongatum*, 799
  Eucalyptus botryoides, nucleotide sequence, cinnamyl alcohol dehydrogenase, 305
  expression and growth kinetics, wall extensibility, brassinosteroid-regulated stem elongation, 505
  glyceraldehyde-3-phosphate dehydrogenase, *Atriplex nummularia*, 1105
  glycine-rich *Arabidopsis* proteins, RNA-binding motifs, cold treatment and circadian rhythm, 1015
  heptaubiquitin, structure of, tomato, 299
  herpes simplex virus thymidine kinase, conditional negative-selection marker gene, *Arabidopsis thaliana*, 1067
  3-hydroxy-3-methylglutaryl coenzyme A reductase, arachidonic acid signal transduction, potato, 1237
  kin1 and *cor6.6*, 5.3-kb genomic fragment, *Arabidopsis thaliana*, 291
  manipulation of *Synechocystis*, 349
  nad4, high conservation, maize mitochondria, 301
  plastid proteins, red and blue light sensitivities, spinach, 997
  *psa*C, sequence, *Synechococcus* PCC 6301, 1459
  *psb*D/C, light-induced transcription, plastid extracts from seedlings, 1259
  *psb*D-*psb*C transcription, photosensory pathways, barley chloroplasts, 1119
  rab18, water status and abscisic acid content, freezing tolerance in *Arabidopsis thaliana*, 1341
  rolC promoter region, somatic embryogenesis-related activation, carrot cell cultures, 1151
  soybean seed storage protein, nutritional stress and abscisic acid mutations, transgenic *Arabidopsis thaliana*, 497
  spinach endoplasmic reticulum-luminal 70-kDa heat-shock cognate, cold acclimation, 1359
  stearoyl-acyl carrier protein desaturase, temporal and tissue-specific regulation, *Brassica napus*, 1167
  stress-responsive, transcripts accumulating during cold storage, potato, 445
  systemic acquired resistance, 1109
  transcripts induced by oxygen deprivation, maize, 387
  *trn*R/*trn*T/*trn*E, *Chlamydomonas* chloroplasts, 1093
  trpB, homology to *Arabidopsis* and maize, *Synechocystis* PCC 6803, 461
  ubiquitin, nucleotide sequence, soybean, 805
  Vsp, sucrose modulation and inhibition by auxin, soybean, 439
Geranylgeranyl pyrophosphate synthase, nucleotide sequence, *Arabidopsis* cDNA, 1469
Germin, -like protein, nucleotide sequence of transcript, salt-stresed barley roots, 803
Germination, corn, loss of dessication tolerance, respiration in free radical processes, 1333
Gibberellin
  abscisic acid and, external face, plasma membrane of barley aleurone protoplasts, 1185
  perception, abscisic acid, 1107
  reduction of metabolism of A_{20} to A_1, decapitation, pea, 277
Gibberellin A_3, chromoplast biogenesis, cucumber corollas, 321
Glomus intraradix, induction of defense response, alfalfa root, 683
Glucans, isoflavonoid production in soybean, *Bradyrhizobium japonicum*, 917
Glutamine synthetase, only one form, *Monoraphidium braunii*, 425
Glutathione reductase, cDNA, soybean root nodule, 1081
Glyceolline, synthesis in soybean, oxidative processes, signaling mechanisms, 945
Glyceraldehyde-3-phosphate dehydrogenase, gene, *Atriplex nummularia*, 1105
Glycerol-3-phosphate acyltransferase, acyl-acyl carrier protein thioesterase, octadecenoyl-ACP isomers, 839
Glycine, -rich *Arabidopsis* proteins, RNA-binding motifs, cold treatment and circadian rhythm, 1015
Glycine decarboxylase
  P-protein, *Flaveria pringlei*, 1077
  T-protein, potato, 1079
Glycine max (*see* Soybean)
Glycogen synthase, *Escherichia coli*, highly branched starch, transgenic potatoes, 1159
Grain, filling, maize grain and source leaf, ADP-glucose pyrophosphatase, 179
Greening, light-induced, light-harvesting complexes, barley etioplasts, 135
GTP-binding protein
  Arabidopsis thaliana functional complementation, yeast *YPT6* null mutant, 591
  small, *Arabidopsis thaliana*, 295

Guard cells, *Commelina communis*, abscisic acid, extracellular reception site, 1177

H

H^+-ATPase
inorganic phosphate enhancement, dark respiration, *Selenastrum minutum*, 629
modulation by fusicoccin, plasma membrane vesicles, oat root, 1277
plant defense response, fungal pathogens, tomato, 209
HCO_3^-, Na^+-dependent transport, monensin inhibition, *Synechococcus* UTEX 625, 1419
Heat, cellular, modification by supplemental UVB radiation, cucumber, 395
Heat shock
70-kDa cognate gene, cold acclimation, spinach, 1359
70-kDa cognates, differential influence of ATP, spinach, 1371
low molecular mass autophosphorylating protein, nucleoside diphosphate kinase, sugarcane, 1401
luminal protein, endoplasmic reticulum, cDNA in spinach, 303
protein synthesis and breakdown, pear cells, 1429
Heat stress, stabilization of photosynthesis, unsaturation of membrane lipids, *Synechocystis* PCC 6803, 563
Helianthus annuus (*see* Sunflower)
Herbicide, bleaching, resistance, *Erwinia uredovora* phytoene desaturase in *Synechoccus* PCC7942, 119
Herpes simplex virus, thymidine kinase gene, conditional negative-selection marker gene, *Arabidopsis thaliana*, 1067
Histochemistry, solid-state ^{13}C nuclear magnetic methods and, potato wound periderm, 527
Hordeum vulgare (*see* Barley)
H^+-pyrophosphatases, plant and phototropic, inhibitor aminomethylenediphosphonate, plant and phototropic bacterial H^+-pyrophosphatases, 153
Hydrogen peroxide, histochemistry and localization, tissue printing on nitrocellulose paper, higher plants, 1269
Hydroxycinnamic acid esters, covalent cross-links, cell wall, 315
Hydroxymethyl, -phytochelatins, metal-induced peptides, various plants, 1325
3-Hydroxy-3-methylglutaryl coenzyme A reductase, arachidonic acid signal transduction, potato, 1237
Hydroxymethyl hydroperoxide, inhibition of apoplastic and symplastic peroxidase activity, Norway spruce, 617
Hypocotyls, mung bean, modulation, fusicoccin-binding protein, 691

I

Ice, nucleators, quantification, winter rye leaves, 725
Imbibition, leakage, altered phase behavior, cattail aging dry pollen, 1193
Indole-3-acetic acid, branching mutant *rms-2* in pea, 953
Internodes, rapidly growing, cuticle biosynthesis, deepwater rice, 719
Interphase cells, loss of microtubules, cycloheximide treatment, onion root tips, 281
Iron, transport to developing ovules, pea, 649
Irradiances, growth, acclimation, recovery from photoinhibition in pea, 1033
Isocitrate lyase, malate synthase genes and, activity in pollen, *Brassica napus*, 857
Isoflavonoid, production in soybean, cyclic β-1,6-1,3 glucans, *Bradyrhizobium japonicum*, 917
Isoprenoid, accumulation in potato, arachidonic acid signal transduction, 1237

J

Juglans regia, root, water and solute flow dynamics, 189

L

Lacistema aggregatum, root, water and solute flow dynamics, 189
Leaf
barley
nucleotide sequence of cDNA, elongation factor, 807
upper and lower epidermis, vacuolar solute patterns, 1201
oat, plasma membrane lipid composition, freezing tolerance, 479
rice, ferredoxin-$NADP^+$ reductase, sequence, 1473
rye
antifreeze proteins, 971
plasma membrane lipid composition, freezing tolerance, 479
soybean
acid phosphatase, increased by seedpod removal, 49
cellulase gene expression, 557
respiration, atmospheric carbon dioxide enrichment, 355
sugar maple, states 1 and 2, action spectra of photosystems I and II, 1209
tobacco
mosaic virus, photosynthetic characteristics and nitrogen partitioning, 1043
mosaic virus, susceptibility to photoinhibition, 1051
wheat, elicitor-induced cinnamyl alcohol dehydrogenase, 551
Lectin, peanut nodule, nodule parenchyma, 327
Leghemoglobins, modified, soybean root nodules, 1231
Lettuce, endosperm, cell-wall autohydration, 623
Light
blue
phosphorylation at seryl residues, pea plasma membrane protein, 1317
photosensory pathways, barley chloroplasts, 1119
regulation of *Cab*1 gene, *Arabidopsis thaliana*, 1251
circadian clock and, *CAT2* expression, *Arabidopsis*, 889
effects of illumination, xanthophyll composition of photosystem II light-harvesting complexes, spinach thylakoid membranes, 227
higher sensitivity, S_1 destabilization, metribuzin-resistant *Synechocystis* mutants, 235
-induced greening, light-harvesting complexes, barley etioplasts, 135
-induced transcription, wheat *psb*D/C, plastid extracts from seedlings, 1259
low red/far-red ratio, phytochrome B, accelerated flowering response of *Arabidopsis thaliana*, 1311
nitrogen nutrition and, leaf susceptibility to photoinhibition, tobacco mosaic virus, 1051
red and blue, sensitivities, promoters from genes for plastid proteins, 997
-stimulated cotyledon expansion, *Arabidopsis* seedlings, 1027
Light-harvesting complexes, light-induced greening, barley etioplasts, 135
Light-harvesting complex II, effects of illumination, xanthophyll composition, spinach thylakoid membranes, 227
Light-harvesting protein, cDNA clone, *Mantoniella squamata*, 797
Lignin, covalent cross-links, cell walls, 315
Lilium longiflorum (*see* Lily)
Lily, human vitronectin probes, classes of proteins and mRNAs, 711
Linum usitatissimum, cDNA, sequence, stearoyl-acyl carrier protein desaturase, 1075
Lipids
membrane, unsaturation and stabilization of photosynthesis, *Synechocystis* PCC 6803, 563
oxidative processes in signaling mechanisms, glyceollin synthesis, soybean, 945
plasma membrane, freezing tolerance, oat and rye leaves, 479
Lipoxygenase, arachidonic acid signal transduction, potato, 1237
Lophopyrum elongatum, stress-induced *ESI3* gene, 799
Lupinus albus, altered metabolism, phosphorus stress-induced proteoid roots, 657
Lupinus angustifolius
root nodules, monoclonal antibodies, aspartate aminotransferase-P1, 91
root tips, cDNA encoding aspartate aminotransferase-P_1, 417
Lycopersicon esculentum (*see* Tomato)
Lysophosphatidylcholine, modulation of H^+-ATPase activity by fusicoccin, plasma membrane vesicles, oat root, 1277

M

Magnesium, -insertion step, chlorophyll-deficient wheat and barley mutants, 639
Maize (*see* Corn)
Malate synthase, isocitrate lyase genes and, activity in pollen, *Brassica napus*, 857
Malus malus (*see* Apple)
Mantoniella squamata, cDNA clone, light-harvesting protein, 797
Maple, generation of monolconal antibodies, plant cell-wall polysaccharides, 699
Maple, sugar
leaf, states 1 and 2, action spectra of photosystems I and II, 1209
root, water and solute flow dynamics, 189
Medicago sativa (*see* Alfalfa)
Membrane, barley root, association, nitrate reductase, 925
Metal, -induced peptides, hydroxymethyl-phytochelatins, various plants, 1325
Methionine, soluble, overaccumulation, *Arabidopsis* mutant *mto1*, 881
Methotrexate, -resistant cells, folate metabolism, *Datura innoxia*, 373

Metribuzin, -resistant *Synechocystis* mutants, S_1 destabilization, higher sensitivity to light, 235
Microperfusion, attached wheat grains, phloem unloading and post-phloem transport, 7
Microsomes, membrane proteins, aluminum stress, wheat, 1007
Microtubules, components of plant cell cytoskeleton, 1
Mineral, nutrition, iron, 815
Mitochondria
  acyl carrier protein isoform, *Arabidopsis thaliana*, 1221
  maize, high conservation, *nad4* gene, 301
Monensin, inhibition of Na^+-dependent HCO_3^- transport, *Synechococcus* UTEX 625, 1419
Monoclonal antibodies
  aspartate aminotransferase-P1, lupin root nodules, 91
  plant cell-wall polysaccharides, maple, 699
Monoraphidium braunii, only one form of glutamine synthetase, 425
Mosaic virus
  tobacco
    chlorophyll fluorescence imaging, leaves, 1059
    leaf susceptibility to photoinhibition, light and nitrogen nutrition, 1051
    photosynthetic characteristics and nitrogen partitioning, leaves, 1043
Mung bean
  aminomethylenediphosphonate, inhibitor, plant and phototropic bacterial H^+-pyrophosphatases, 153
  hypocotyls, modulation, fusicoccin-binding protein, 691
  low temperature-induced cytoplasmic acidosis, 1131
Mutagenesis
  branching enzyme I, maize endosperm, *Escherichia coli*, 1449
  genetic manipulation of *Synechocystis*, 349

N

$NADP^+$ reductase, -ferredoxin, sequence of cDNA, rice leaf, 1473
Nicotiana tabacum (*see* Tobacco)
Nitrate reductase
  association with barley root membranes, 925
  photosynthetic electron transport, carbon assimilation and partitioning, transgenic tobacco, 171
Nitrocellulose paper, tissue printing, higher plants, histochemistry and localization of H_2O_2, 1269
Nitrogen
  nutrition and light, leaf susceptibility to photoinhibition, tobacco mosaic virus, 1051
  partitioning, photosynthesis, tobacco mosaic virus, 1043
  symbiotic dinitrogen fixation, essentiality of boron, pea *Rhizobium* nodules, 85
Nitrogenase, electron allocation, model, legume nodules, 541
Nodule
  development in soybean, posttranscriptional regulation, ferritin, 263
  soybean, composition and distribution, adenylates, 217
Nodulin, cDNA, homology to protochlorophyllide reductase, *Medicago truncatula*, 289
Nuclear magnetic resonance
  ^{13}C, histochemistry and, potato wound periderm, 527
  nucleotide availability, maize root tips, 581
Nucleoside diphosphate kinase, low molecular mass autophosphorylating protein, sugarcane, 1401
Nucleotides
  availability, maize root tips, 581
  complete sequence, sucrose synthase 2 cDNA, maize, 293
  sequence, *Brassica napus* Clp homolog, 1087
  sequence of *Arabidopsis* cDNA
    geranylgeranyl pyrophosphate synthase, 1469
    phytoene synthase, 1471
  sequence of cDNA, elongation factor, barley primary leaf, 807
  sequence of cDNA for peroxidase, *Arabidopsis thaliana*, 285
  sequence of *Eucalyptus botryoides* gene, cinnamyl alcohol dehydrogenase, 305
  sequence of soybean ubiquitin gene, 805
  sequence of transcript, germin-like protein, salt-stressed barley roots, 803
Nutrient, uptake changes, ascorbate free radical-stimulated onion roots, 271
Nutrition, mineral, iron, 815

O

Oat
  root, modulation of H^+-ATPase activity, fusicoccin in plasma membrane vesicles, 1277
  rye and, extremes of freezing tolerance, 467
  rye leaves and, plasma membrane lipid composition, freezing tolerance, 479
Oils, dietary, design of new plant products, fatty acid metabolism, 821
Onion
  ascorbate free radical-stimulated root, nutrient uptake changes, 271
  root tips, loss of microtubules in interphase cells, cycloheximide treatment, 281
Oryza sativa (*see* Rice)
Ovules, pea, development of, iron transport, 649
Oxygen, deprivation, induction of transcripts, maize, 387
Ozone, biochemical responses, parsley, 67

P

Δ^4-Palmitoyl-acyl carrier protein desaturase, petroselinic acid synthesis, coriander endosperm, transgenic tobacco, 827
Panicum violaceum, hydroxymethyl-phytochelatins, metal-induced peptides, 1325
Parenchyma, nodule, vacuoles and extracellular matrix, peanut nodule lectin in infected cells, 327
Parenchyma cells, xylem ray, response to freezing stress, red osier dogwood, 737
Parsley, biochemical responses to ozone, 67
Pathogenesis, -related proteins in tomato, β-aminobutyric acid, resistance to *Phytophthora infestans*, 59
Pathogens
  fungal, plant defense response, tomato, 209
  wound-inducible protein, antifungal activity, tobacco, 109
Pea
  aged epicotyls, chalcone isomerase, 1465
  antigenic relationships, chloroplast and cytosolic fructose-1,6-bisphosphatases, 381
  branching mutant *rms-2*, 953
  carbonic anhydrase, ribulose-1,5-bisphosphate carboxylase/oxygenase, 1393
  iron transport to developing ovules, 649
  plasma membrane protein, blue light, phosphorylation at seryl residues, 1317
  recovery from photoinhibition, acclimation, varying growth irradiances, 1033
  reduction of metabolism by decapitation, giberrellin A_{20} to A_1, decreased *Le/le* difference, 277
  symbiotic dinitrogen fixation, essentiality of boron, rhizobium nodules, 85
  tissue printing on nitrocellulose paper, histochemistry, localization of H_2O_2, 1269
Peanut
  nodule lectin in infected cells, vacuoles, extracellular matrix of nodule parenchyma, 327
  seed, calcium-dependent protein kinase, 961
Pear, protein synthesis, breakdown during heat shock, 1429
Pectinase, deconstruction of cell wall, 1113
Pennisetum setaceum, hydroxymethyl-phytochelatins, metal-induced peptides, 1325
Peptides, metal-induced, hydroxymethyl-phytochelatins, various plants, 1325
Periderm
  Eucalyptus gunnii, cinnamyl alcohol dehydrogenase, 75
  potato wound, histochemical and solid-state ^{13}C nuclear magnetic methods, 527
Periwinkle, Madagascar, 14-kDa polypeptide, cDNA, 1097
Peroxidase
  apoplastic and symplastic, inhibiton by hydroxymethyl hydroperoxide, Norway spruce, 617
  cDNA, nucleotide sequence, *Arabidopsis thaliana*, 285
Petroselinic acid
  developing umbelliferae endosperm, phosphatidylcholine, 845
  synthesis in coriander endosperm and tobacco, Δ^4-palmitoyl-acyl carrier protein desaturase, 827
Petroselinoyl, -ACP thioesterase, Umbelliferae, 839
Petroselinum crispum (*see* Parsley)
pH, cytosolic, synthesis of γ-aminobutyric acid, *Asparagus sprengeri*, 865
Pharbitis nil, mRNA accumulation, dark and circadian regulation, 569
Phaseolus vulgaris (*see* Bean)
Phenylalanine ammonia-lyase, full-length cDNA, tobacco cell culture, 1091
Phleum pratense, hydroxymethyl-phytochelatins, metal-induced peptides, 1325
Phloem
  iron transport, developing ovules, pea, 649
  post-phloem transport pathway in maternal tissues, use of fluorescent tracers,

developing wheat grains, 17
unloading and post-phloem transport, microperfusion, attached wheat grains, 7
Phosphate, inorganic, dark respiration, *Selenastrum minutum*, 629
Phosphatidylcholine, metabolism of petroselinic acid, developing Umbelliferae endosperm, 845
Phospho*enol*pyruvate carboxylase, maize, affinity for substrate, oligomerization, 613
Phosphoinositides, barley aleurone tissue, 1381
Phosphorus, stress-induced proteoid roots, altered metabolism, *Lupinus albus*, 657
Photoinhibition, recovery in pea, acclimation, varying growth irradiances, 1033
Photooxidants, hydroxymethyl hydroperoxide, inhibition of apoplastic and symplastic peroxidase activity, Norway spruce, 617
Photosynthesis
acclimation to elevated CO_2, transformed tobacco, decreased Rubisco, 409
electron transport, carbon assimilation and partitioning, transgenic tobacco, 171
stabilization against heat stress, unsaturation of membrane lipids, *Synechocystis* PCC 6803, 563
Photosystem, I and II, states 1 and 2, sugar maple leaves, 1209
Photosystem II, genetic manipulation of *Synechocystis*, 349
Phytochelatins
cadium-sensitive and -tolerant *Silene vulgaris*, 255
hydroxymethyl-, metal-induced peptides, various plants, 1325
Phytochrome A, phytochrome B and, overlapping but distinct functions, *Arabidopsis* development, 1139
Phytochrome B
light-stimulated cotyledon expansion, *Arabidopsis* seedlings, 1027
low red/far-red ratio, accelerated flowering response, *Arabidopsis thaliana*, 1311
regulation, induction, *Arabidopsis thaliana* seed germination, 363
Phytoene desaturase, *Erwinia uredovora*, *Synechococcus* PCC7942, resistance to bleaching herbicide, 119
Phytoene synthase, nucleotide sequence, *Arabidopsis* cDNA, 1471
Phytophthora infestans, resistance, β-aminobutyric acid, accumulation of pathogenesis-related proteins in tomato, 59
Picea abies (*see* Spruce, Norway)
Pisum sativum (*see* Pea)
Plant Gene Register
allophycocyanin α subunit gene, *Cyanidium caldarium*, 1085
Arabidopsis cab gene, homology to *Cab-8* in tomato, 297
auxin-inducible proteinase inhibitor gene, tomato, 811
cDNA, endoplasmic reticulum-luminal heat shock protein, spinach, 303
cDNA clone
cytosolic triose-phosphate isomerase, *Arabidopsis thaliana*, 1103
light-harvesting protein, *Mantoniella squamata*, 797
cDNA clones encoding isoforms, B subunit of vacuolar ATPase, barley roots, 287
cDNA cloning, 42-kDa subunit, protoplast-release-inducing protein from *Closterium*, 1095
cDNA encoding cell-wall invertase, *Arabidopsis* gene, 809
cDNA encoding chalcone isomerase, aged pea epicotyls, 1465
cDNA encoding glutathione reductase, soybean root nodule, 1081
cDNA for 14-kDa polypeptide, *Catharanthus roseus*, 1097
cDNA for *S*-adenosyl-L-homocysteine hydrolase, *Catharanthus roseus*, 1099
cDNA sequence
annexin from alfalfa, 1463
apple ribulose-1,5-bisphosphate carboxylase small subunit, 1083
Chlamydomonas chloroplast *trn*R/*trn*T/*trn*E genes, 1093
chlorophyll *a*/*b*-binding protein gene, soybean, 1475
complete nucleotide sequence, maize sucrose synthase 2 cDNA, 293
ESI3, stress-induced gene, *Lophopyrum elongatum*, 799
full-length cDNA, phenylalanine ammonia-lyase, tobacco cell culture, 1091
glyceraldehyde-3-phosphate dehydrogenase gene, *Atriplex nummularia*, 1105
5.3-kb genomic fragment, *Arabidopsis thaliana* containing *kin1* and *cor6.6*, 291
nad4 gene, high conservation, maize mitochondria, 301
nodulin cDNA, homology to protochlorophyllide reductase, *Medicago truncatula*, 289
nucleotide sequence
Arabidopsis cDNA, geranylgeranyl pyrophosphate synthase, 1469
Arabidopsis cDNA, phytoene synthase, 1471
Brassica napus Clp homolog, 1087
cDNA for peroxidase, *Arabidopsis thaliana*, 285
Eucalyptus botryoides gene, cinnamyl alcohol dehydrogenase, 305
germin-like protein, salt-stressed barley roots, 803
soybean ubiquitin gene, 805
nucleotide sequence of cDNA, elongation factor, barley primary leaf, 807
P-protein of glycine decarboxylase, *Flaveria pringlei*, 1077
*psa*C sequence, *Synechococcus* PCC 6301, 1459
root-inducing region, Mikimopine type Ri plasmid pRi1724, 801
sequence comparison, maize calmodulin cDNA, 1467
sequence of cDNA
Linum usitatissimum, steroyl-acyl carrier protein desaturase, 1075
rice leaf ferredoxin-NADP$^+$ reductase, 1473
small GTP-binding protein family, *Arabidopsis thaliana*, 295
structure of heptaubiquitin gene from tomato, 299
tomato genomic clone, homology to gene, abscisic acid-induced protein, 1073
T-protein of glycine decarboxylase, potato, 1079
Plasmalemma, inorganic phosphate enhancement, dark respiration, *Selenastrum minutum*, 629
Plasma membrane
cytochrome *b*-mediated electron transport, ascorbate free radical as electron acceptor, higher plants, 1455
extracellular reception site, abscisic acid, *Commelina communis* guard cells, 1177
lipid composition, freezing tolerance, oat and rye leaves, 479
plant defense response, fungal pathogens, tomato, 209
protein in pea, blue light, phosphorylation at seryl residues, 1317
Plasmid, Mikimopine type Ri, pRi1724, root-inducing region, 801
Plastid
-encoded proteins P700 and D1, apoprotein stability, barley chloroplasts, 907
extracts from seedlings, light-induced transcription, wheat *psb*D/C gene cluster, 1259
proteins, red and blue light sensitivities, spinach, 997
Pollen
cattail, altered phase behavior, imbibitional leakage, 1195
isocitrate lyase and malate synthase genes, *Brassica napus*, 857
Polyethylene glycol, -induced water deficits, hydraulic signals and cell wall hardening, growing corn, 1385
Polysaccharides
covalent cross-links, cell walls, 315
plant cell-wall, generation of monoclonal antibodies, maple, 699
Potassium, changes in transport ability, development, soybean, 937
Potato
arachidonic acid signal transduction, 1237
T-protein of glycine decarboxylase, 1079
transcripts accumulating during cold storage, sequence related, stress-responsive genes, 445
transgenic, highly branched starch, *Escherichia coli* glycogen synthase, 1159
wound periderm, histochemical and solid-state ^{13}C nuclear magnetic resonance methods, 527
P-protein, glycine decarboxylase, *Flaveria pringlei*, 1077
Protease, β-conglycinin-degrading cleavage site, soybean, 127
Protein
de novo synthesis, arachidonic acid signal transduction, potato, 1237
phosphorylation, induction in tobacco cells, elicitor cryptogein, 1245
synthesis and breakdown during heat shock, pear cells, 1429
Proteinase, auxin-inducible, inhibitor gene, tomato, 811
Protein kinase
arachidonic acid signal transduction, potato, 1237
calcium-dependent, peanut seed, 961
Protochlorophyllide reductase, homology, nodulin cDNA, *Medicago truncatula*, 289
Protoplasm, response to freezing stress, xylem ray parenchyma cells, red osier dogwood, 737
Protoplasts
barley aleurone, external face, gibberellin

and abscisic acid, 1105
-release-inducing protein, 42-kDa subunit, *Closterium*, 1095
Prunus, undamaged seed, (*R*)-amygdalin and amygdalin hydrolase, large-scale cyanogenesis, 29
Pyrophosphatases, H^+-translocating, PPi analogs, *Vignata radiata*, 153
Pyrus communis (*see* Pear)

R

Rape
Clp homolog, nucleotide sequence, 1087
isocitrate lyase and malate synthase genes, activity in pollen, 857
temporal and tissue-specific regulation, stearoyl-acyl carrier protein desaturase gene, 1167
Resistance, systemic acquired, 1109
Respiration
dark, inorganic phosphate enhancement, *Selenastrum minutum*, 629
free radical processes, loss of dessication tolerance, germinating corn, 1333
soybean leaf, atmospheric carbon dioxide enrichment, 355
Rhizobium, nodules, symbiotic dinitrogen fixation, essentiality of boron in pea, 85
Rhizogenesis, drought, *Arabidopsis thaliana*, 761
Ribulose-1,5-bisphosphate carboxylase/oxygenase
carbonic anhydrase and, pea, 1393
photosynthetic acclimation to elevated CO_2, transformed tobacco, 409
Ribulose bisphosphate carboxylase small subunit, apple, cDNA sequence, 1083
Rice
deepwater, rapidly growing internodes, cuticle biosynthesis, 719
dessication tolerance during embryogenesis, 431
leaf, ferredoxin-$NADP^+$ reductase, sequence, 1473
root, ammonium uptake, 899
RNA
-binding motifs, glycine-rich *Arabidopsis* proteins, cold treatment and circadian rhythm, 1015
blue light regulation, *Cab*1 gene, *Arabidopsis thaliana*, 1251
polymerase α factor, chloroplast, maize/*Chlamydomonas reinhardtii* /*Cyanidium caldarium*, 753
RNA, messenger
accumulation in *Pharbitis nil*, dark and circadian regulation, 569
classes of proteins and, human vitronectin probes, lily, 711
Root
alfalfa, induction of defense response, *Glomus intraradix*, 683
barley
cDNA encoding isoforms, B subunit of vacuolar ATPase, 287
membranes, association of nitrate reductase, 925
Cecropia obtusifolia, water and solute flow dynamics, 189
corn
cell turgor and growth, changes in water potential, 247
hydraulic signals, cell wall hardening, 1385
-inducing region, Mikimopine type Ri plasmid pRi1724, 801
Lacistema aggregatum, water and solute flow dynamics, 189
lupin nodules, monoclonal antibodies, aspartate aminotransferase-P1, 91
Lupinus albus, altered metabolism, phosphorus stress-induced proteoid roots, 657
Lupinus angustifolius, cDNA encoding aspartate aminotransferase-P_1, 417
maize, nucleotide availability, 581
oat, modulation of H^+-ATPase activity, fusicoccin in plasma membrane vesicles, 1277
onion, loss of microtubules in interphase cells, cycloheximide treatment, 281
rice, ammonium uptake, 899
salt-stressed barley, nucleotide sequence of transcript, germin-like protein, 803
soybean
δ-aminolevulinic acid dehydratase, 1411
cDNA encoding glutathione reductase, 1081
initiation, cellulases, 557
soybean nodules, modified leghemoglobins, 1231
Rubidium, changes in transport ability, development, soybean, 937
Rubisco (*see* Ribulose-1,5-bisphosphate carboxylase/oxygenase)
Rye
hydroxymethyl-phytochelatins, metal-induced peptides, 1325
leaf
antifreeze proteins, 971
quantification, intrinsic ice nucleators, 725
oat and, extremes of freezing tolerance, 467
oat leaves and, plasma membrane lipid composition, freezing tolerance, 479

S

Saccharum officinarum (*see* Sugarcane)
Saccharum (*see* Sugarcane)
Salinity
growth under salinity, carbon isotope discrimination, sugarcane, 521
tolerance screening, chlorophyll fluorescence, barley, 667
Salt, -stressed barley roots, nucleotide sequence, transcript encoding germin-like protein, 803
Sarcoplasmic reticulum, animal-type calcium pumps, primary Ca^{2+}-ATPases, red beet, 1295
Secale cereale (*see* Rye)
Seed
Arabidopsis thaliana, induction of seed germination, phytochrome B regulation, 363
peanut, calcium-dependent protein kinase, 961
-pod removal, soybean leaf acid phosphatase, 49
Prunus, (*R*)-amygdalin and amygdalin hydrolase, large-scale cyanogenesis, 29
soybean storage protein gene, nutritional stress and abscicic acid mutations, transgenic *Arabidopsis thaliana*, 497
Seedling, plastid extracts, light-induced transcription, wheat *psb*D/C gene cluster, 1259
Selenastrum minutum, inorganic phosphate enhancement, dark respiration, 629
Serine acetyltransferase, free of *O*-acetylserine(thiol)lyase, spinach chloroplasts, 597
Seryl residues, phosphorylation, blue light, pea plasma membrane protein, 1317
Signaling, chemical, plants that grow in drying soils, 309
Signal transduction
arachidonic acid, potato, 1237
phytochromes A and B, overlapping but distinct functions, *Arabidopsis* development, 1139
systemic acquired resistance, 1109
Silene vulgaris, cadmium-sensitive and -tolerant, phytochelatins, 255
Sodium
-dependent HCO_3 transport-mediated accumulation, quenching of chlorophyll *a* fluorescence, *Synechococcus* UTEX 625, 785
-dependent HCO_3^- transport, monensin inhibition, *Synechococcus* UTEX 625, 1419
Soil, drying, chemical signals, 309
Solutes
flow dynamics, roots of trees, 189
vacuolar, upper and lower epidermis, barley leaves, 1201
Soybean
activation of glyceollin synthesis, oxidative processes, signaling mechanisms, 945
δ-aminolevulinic acid dehydratase, 1411
cell-suspension culture, detoxification of formaldehyde, spider plant, 1301
cellulase gene expression, 557
chlorophyll *a*/*b*-binding protein gene, 1475
β-conglycinin-degrading protease cleavage site, 127
elongating epicotyls, molecular cloning, brassinosteroid-regulated gene, 161
extensin cDNA, 793
fruit Ca^{2+} (Sr^{2+}) and K^+ (Rb^+) transport, changes in ability, development, 937
gene expression and growth kinetics, wall extensibility, brassinosteroid-regulated stem elongation, 505
isoflavonoid production, cyclic β-1,6-1,3 glucans, *Bradyrhizobium japonicum*, 917
leaf acid phosphatase, purification, increased by seed-pod removal, 49
leaf respiration, atmospheric carbon dioxide enrichment, 355
nodule development, posttranscriptional regulation, ferritin, 263
nodules
cDNA encoding ferric leghemoglobin, 453
model, regulation of nitrogenase electron allocation, 541
nodule tissue, composition and distribution, adenylates, 217
root nodule, cDNA encoding glutathione reductase, 1081
root nodules, modified leghemoglobins, 1231
seed storage protein gene, nutritional stress and abscisic acid mutations, transgenic *Arabidopsis thaliana*, 497
tissue printing on nitrocellulose paper, histochemistry, localization of H_2O_2, 1269
ubiquitin gene, nucleotide sequence, 805
Vsp gene expression, sucrose modulation,

inhibition by auxin, 439
Spider plant, detoxification of formaldehyde, soybean cell-suspension culture, 1301
Spinach
antigenic relationships, chloroplast and cytosolic fructose-1,6-bisphosphates, 381
cDNA, endoplasmic reticulum-luminal heat shock protein, 303
chloroplasts
phosphopantethenylated precursor acyl carrier protein, 989
serine acetyltransferase free of *O*-acetylserine(thiol)lyase, 597
endoplasmic reticulum-luminal 70-kDa heat-shock cognate gene, 70-kDa heat-shock genes, cold acclimation, 1359
70-kDa heat-shock cognates, differential influence, ATP, 1371
promoters from genes for plastid proteins, sensitivities, red and blue light, 997
thylakoid membranes, effects of illumination, xanthophyll composition of photosystem II light-harvesting complexes, 227
Spinacia oleracea (*see* Spinach)
Spruce, Norway, inhibition of apoplastic and symplastic peroxidase activity, photooxidant hydroxymethyl hydroperoxide, 617
Stalk, flower, elongation, carbohydrate status of tulip bulbs, 515
Starch, highly branched, *Escherichia coli* glycogen synthase, transgenic potato, 1159
Stearoyl-acyl carrier protein, desaturase gene, temporal and tissue-specific regulation, *Brassica napus*, 1167
Stem, brassinosteroid-regulated elongation, gene expression and growth kinetics, wall extensibility, 505
Steroyl-acyl carrier protein desaturase, cDNA from *Linum usitatissimum*, sequence, 1075
Stress
-induced *ESI3* gene, *Lophopyrum elongatum*, 799
phosphorus, proteoid roots, altered metabolism in *Lupinus albus*, 657
-responsive genes, transcripts accumulating during cold storage, potato, 445
Strontium, changes in transport ability, development, soybean, 937
Suberization, potato wound periderm, histochemistry, ^{13}C nuclear magnetic methods, 535
Sucrose
dessication tolerance during embryogenesis, rice and wild rice, 431
modulation, soybean *Vsp* gene expression, inhibition by auxin, 439
Sucrose synthase, temporal and spatial expression pattern, tomato fruit development, 535
Sucrose synthase 2, cDNA in maize, complete nucleotide sequence, 293
Sugarcane
growth under salinity, carbon isotope discrimination, gas exchange, 521
low molecular mass autophosphorylating protein, identification as nucleoside diphosphate kinase, 1401
Sulfate, transport during growth, *Chlamydomonas reinhardtii*, 971
Sulfide, incorporation, phytochelatins, cadmium-sensitive and -tolerant *Silene vulgaris*, 255
Sunflower, tissue printing on nitrocellulose paper, histochemistry, localization of H_2O_2, 1269
Superoxide dismutase, copper-zinc, developmental and environmental regulation, transgenic tobacco, 873
Synechococcus PCC 6301, sequence of *psa*C gene, 1459
Synechococcus PCC 7942
Erwinia uredovora phytoene desaturase, resistance, bleaching herbicide, 119
inability to low inorganic carbon conditions, 605
Synechococcus UTEX 625
monensin inhibition, Na^+-dependent HCO_3^- transport, 1419
quenching of chlorophyll *a* fluorescence, accumulation of inorganic carbon, 785
Synechocystis
genetic manipulation, 349
metribuzin-resistant mutants, S_1 destabilization, higher sensitivity to light, 235
Synechocystis PCC 6803
single gene for β subunit, *trpB* gene homology, *Arabidopsis* and maize, 461
unsaturation of membrane lipids, stabilization of photosynthesis, heat stress, 563

T

Temperature, low, cytoplasmic acidosis, mung bean cells, 1131
Thylakoid membrane, spinach, effects of illumination, xanthophyll composition of photosystem II light-harvesting complexes, 227
Thylakoids, greening barley, light-harvesting complex II apoproteins, 135
Thymidine kinase, herpes simplex, conditional negative-selection marker gene, *Arabidopsis thaliana*, 1067
Tobacco
cell culture, full-length cDNA, phenylalanine ammonia-lyase, 1091
detoxification of formaldehyde, spider plant, soybean cell-suspension culture, 1301
developmental and environmental regulation, cytosolic Cu/Zn-superoxide dismutase promoter, 873
leaf, chlorophyll fluorescence imaging, mosaic virus, 1059
mosaic virus
leaf susceptibility to photoinhibition, light and nitrogen nutrition, 1051
photosynthetic characteristics and nitrogen partitioning, leaves, 1043
pathogen- and wound-inducible protein, antifungal activity, 109
protein phosphorylation, induction in cells, elicitor cryptogein, 1245
protoplasts, inhibition of cell wall assembly and cell division, 3,4-dehydroproline, 747
transformed, photosynthetic acclimation, elevated CO_2 and reduced Rubisco, 409
transgenic
Δ^4-palmitoyl-acyl carrier protein desaturase, petroselinic acid synthesis, 827
photosynthetic electron transport, carbon assimilation and partitioning, 171
Tomato
auxin-inducible proteinase inhibitor gene, 811
Cab-8, cab gene in *Arabidopsis*, 297
fruit development, temporal and spatial expression pattern, sucrose synthase, 535
gene expression and growth kinetics, wall extensibility, brassinosteroid-regulated stem elongation, 505
genomic clone, homology to gene, abscisic acid-induced protein, 1073
pathogenesis-related proteins, β-aminobutyric acid, resistance to *Phytophthora infestans*, 59
plant defense response to fungal pathogens, 209
structure of heptaubiquitin gene, 299
T-protein, glycine decarboxylase, potato, 1079
Tree, root, water and solute flow dynamics, 189
Triose, -phosphate isomerase, cDNA clone, *Arabidopsis thaliana*, 1103
Triticum aestivum (*see* Wheat)
Trypsin, modulation of H^+-ATPase activity, fusicoccin, plasma membrane vesicles from oat root, 1277
Tryptophan synthase, *TrpB* gene homology, single gene for β subunit for *Synechocystis* PCC 6803, *Arabidopsis* and maize, 461
Tubulin, microtubule components, plant cell cytoskeleton, 1
Tulipa gesneriana, carbohydrate status of bulbs, cold-induced flower stalk elongation, flowering, 515
Turgor, growth and, changes in water potential, maize roots, 247
Typha latifolia (*see* Cattail)

U

Ultraviolet A, -activated *psb*D-*psb*C transcription, photosensory pathways, barley chloroplasts, 1119
Ultraviolet B, supplemental radiation, modification of cellular heat sensitivity, cucumber, 395
Umbelliferae
endosperm, phosphatidylcholine, metabolism of petroselinic acid, 845
petroselinoyl-ACP thioesterase, 839

V

Vaccinium (*see* Blueberry)
Vacuole
distinct patterns of solutes, upper and lower epidermis, barley leaves, 1201
H^+-translocating pyrophosphatases, PPi analogs, 153
peanut nodule lectin in infected cells, extracellular matrix, nodule parenchyma, 327
Vigna radiata (*see* Mung bean)
Virulence factors, deconstruction of cell wall, 1113
Vitronectin, human probes, classes of proteins and mRNAs, lily, 711

W

Water
polyethylene glycol-induced deficits, hydraulic signals from root, cell wall

hardening in growing corn, 1385
potential, cell turgor and growth, maize roots, 247
relations and low-temperature acclimation, freezing tolerance, cactus, 675
solute flow dynamics and, roots of trees, 189
status and abscisic acid content, *rab18* gene, freezing tolerance in *Arabidopsis thaliana*, 1341
Wheat
aluminum stress, induction, microsomal membrane proteins, 1007
attached grains, microperfusion, phloem unloading and post-phloem transport, 7
chlorophyll-deficient mutants, defects in magnesium-insertion step, 639
cystationine γ-synthase, 1215
developing grains, use of fluorescent tracers, post-phloem transport pathway in maternal tissues, 17
leaf, elicitor-induced cinnamyl alcohol dehydrogenase, 551
*psb*D/C gene cluster, light-induced transcription, plastid extracts from seedlings, 1259
Wood, xylem ray parenchyma cells, response to freezing stress, red osier dogwood, 737
Wounding, -inducible protein, antifungal activity, tobacco, 109

X

Xanthophyll, composition of photosystem II LHC complexes, effects of illumination, spinach thylakoid membranes, 227
Xylanase, deconstruction of cell wall, 1113
Xylem, sap, chemical signaling, root-to-shoot, 309
Xyloglucans, degradation and cell wall-embedded cellulose, cellobiohydrolase and endoglucanases from *Trichoderma viride*, 99

Y

Yeast, *YPT6* null mutant, functional complementation, *Arabidopsis thaliana*, 591

Z

Zizania palustris, dessication tolerance during embryogenesis, 431